

What is claimed is:

[Claim 1] An isolated DNA molecule or fragments thereof useful as a DNA probe molecule or DNA primer molecule, wherein said DNA molecule or fragment thereof is homologous or complementary to a DNA molecule selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4 and SEQ ID NO:5.

[Claim 2] An isolated DNA primer molecule of claim 1 comprising at least 11 contiguous nucleotides of SEQ ID NO:3, or its complement that is useful in a DNA amplification method to produce an amplicon comprising SEQ ID NO:1, wherein said amplicon is diagnostic for corn event MON88017 DNA.

[Claim 3] An isolated DNA primer molecule claim 1 comprising at least 11 contiguous nucleotides of SEQ ID NO:4, or its complement that is useful in a DNA amplification method to produce an amplicon comprising SEQ ID NO:2, wherein said amplicon is diagnostic for corn event MON88017 DNA.

[Claim 4] A method of detecting the presence of DNA corresponding to the corn event MON88017 in a sample, the method comprising:

- (a) contacting the sample comprising DNA with a DNA primer pair, wherein said DNA primer pair comprises at least one DNA primer molecule of claim 1; and
- (b) performing a polynucleic acid amplification reaction, thereby producing an amplicon; and
- (c) detecting said amplicon,

wherein said amplicon comprises SEQ ID NO:1 or SEQ ID NO:2.

[Claim 5] A stably transformed maize plant, whose DNA when analyzed by the method of claim 4, produces a DNA amplicon comprising SEQ ID NO:1 or SEQ ID NO:2.

[Claim 6] In the method of claim 4, wherein said DNA primer pair is SEQ ID NO:6 and SEQ ID NO:7.

[Claim 7] A method of detecting the presence of a DNA corresponding to the corn event MON88017 in a sample, the method comprising:

- (a) contacting the sample comprising DNA with a probe that hybridizes under stringent hybridization conditions with genomic DNA from the corn event MON88017 and does not hybridize under the stringent hybridization conditions with a control corn plant genomic DNA, wherein said probe is homologous or complementary to SEQ ID NO:1 or SEQ ID NO:2; and
- (b) subjecting the sample and probe to stringent hybridization conditions; and

detecting hybridization of the probe to the DNA.

[Claim 8] A glyphosate tolerant and a corn rootworm resistant corn plant, wherein the glyphosate tolerant trait and corn rootworm resistant trait occur at the same locus and are genetically linked to a complement of a marker polynucleic acid, wherein said marker polynucleic acid molecule is homologous or complementary to a DNA molecule selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:2.

[Claim 9] A method of determining the zygosity of the progeny of corn event MON88017 comprising:

(a) contacting the sample comprising corn DNA with a primer set comprising SEQ ID NO:30, SEQ ID NO:31, and SEQ ID NO:32, that when used in a nucleic-acid amplification reaction with genomic DNA from corn event MON88017, produces a first amplicon that is diagnostic for corn event MON88017; and

(b) performing a nucleic acid amplification reaction, thereby producing the first amplicon; and

(c) detecting the first amplicon; and

(d) contacting the sample comprising corn DNA with said primer set, that when used in a nucleic-acid amplification reaction with genomic DNA from corn plants produces a second amplicon comprising the native corn genomic DNA homologous to the corn genomic region of a transgene insertion identified as corn event MON88017; and

(e) performing a nucleic acid amplification reaction, thereby producing the second amplicon; and

(f) detecting the second amplicon; and

(g) comparing the first and second amplicons in a sample, wherein the presence of both amplicons indicates the sample is heterozygous for the transgene insertion.

[Claim 10] A method of producing a corn plant that is resistant to root feeding damage by corn rootworm larvae and tolerates application of glyphosate herbicide comprising:

- (a) sexually crossing a first glyphosate tolerant/corn rootworm resistant corn plant MON88017 parent plant and a second parent corn plant that lacks the tolerance to glyphosate and corn rootworm feeding damage, thereby producing a plurality of progeny plants; and
- (b) treating said progeny plants with glyphosate; and
- (c) selecting said progeny plants that are tolerant to glyphosate, wherein said progeny plant are also resistant to corn rootworm feeding damage.

[Claim 11] A hybrid corn seed produced by the method of claim 10, wherein at least one parent is corn event MON88017.

[Claim 12] A method for controlling weeds in a field of corn event MON88017 comprising the step of applying an effective dose of a glyphosate containing herbicide to said field of corn event MON88017.

[Claim 13] Seed of corn plant designated MON88017, having representative seed of said corn plant having been deposited under ATCC Accession No. PTA-5582.

[Claim 14] A corn plant MON88017 or parts thereof produced by growing the seed of claim 1.

[Claim 15] The corn plant MON88017 or parts thereof of claim 2, comprising pollen, ovule, seed, roots, or leaves.

[Claim 16] The corn plant MON88017 of claim 2 further comprising progeny thereof.

[Claim 17] The corn plant MON88017 of claim 4, wherein the genome of said corn plant or progeny thereof comprises a DNA

molecule selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3 and SEQ ID NO:4.

[Claim 18] The corn plant MON88017 or parts thereof of claim 4, the genome of which produces an amplicon diagnostic for corn plant MON88017 when tested in a DNA amplification method that comprises a DNA primer pair that consists of SEQ ID NO:6 and SEQ ID NO:7.

[Claim 19] The corn plant MON88017 of claim 5, wherein said corn plant is tolerant to corn rootworm and glyphosate.

[Claim 20] The corn plant MON88017 of claim comprising in its genome the linked plant expression cassettes of pMON53616.

[Claim 21] An isolated nucleic acid segment comprising at least from about 11 to about 20 consecutive nucleotides selected from the group consisting of SEQ ID NO:1, and SEQ ID NO:2.

[Claim 22] The isolated nucleic acid segment as set forth in Claim 21 for use in a nucleic acid amplification method for detecting the presence of corn event MON88017 nucleic acids in a biological sample.

[Claim 23] A polynucleotide purified or produced from genomic DNA obtained from corn event MON88017, wherein said polynucleotide comprises a nucleotide sequence which is or is complementary to a sequence selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:2.

[Claim 24] A method of detecting the presence of a nucleotide corresponding to corn event MON88017 in a biological sample, the method comprising:

(a) contacting said sample with a first and a second primer wherein said first primer is a nucleotide sequence at least 11 consecutive nucleotides selected from the group consisting of SEQ ID NO:3 and SEQ ID NO:1, and said second primer is a nucleotide sequence at least 11 consecutive nucleotides selected

from the group consisting of the reverse complement of SEQ ID NO:1 and SEQ ID NO:5;

(b) performing a nucleic acid amplification reaction, thereby producing an amplicon; and

(c) detecting said amplicon,

wherein said amplicon comprises SEQ ID NO:1; or

(d) contacting said sample with a first and a second primer wherein said first primer is a nucleotide sequence at least 11 consecutive nucleotides selected from the reverse complement of the group consisting of SEQ ID NO:4 and SEQ ID NO:2, and said second primer is a nucleotide sequence at least 11 consecutive nucleotides selected from the group consisting of SEQ ID NO:2 and SEQ ID NO:5;

(b) performing a nucleic acid amplification reaction, thereby producing an amplicon; and

(c) detecting said amplicon,

wherein said amplicon comprises SEQ ID NO:2.

[Claim 25] A method of detecting the presence of one or more corn event MON88017 polynucleotides in a biological sample, the method comprising:

(a) contacting the sample with a probe under stringent hybridization conditions, wherein said probe comprises a contiguous nucleotide sequence that is or is complementary to a sequence selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:2; and

(b) detecting hybridization of said probe to said sample, wherein said hybridization of said probe to said sample is diagnostic for the presence of said one or more corn event MON88017 polynucleotides in said sample.

[Claim 26] A composition comprising a nucleotide sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2,

and SEQ ID NO:5, wherein said composition is a commodity product selected from the group consisting of corn meal, corn flour, corn oil, corn silk, corn starch, and processed foodstuffs.

[Claim 27] A probe or primer at least from about 11 to about 20 consecutive nucleotides for use in detecting the presence of corn event MON88017 in a biological sample, wherein said consecutive nucleotides are selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, and SEQ ID NO:5.

[Claim 28] A probe or primer as set forth in Claim 27 wherein said probe or primer comprises a nucleotide selected from the group consisting of a deoxyribonucleic acid, a ribonucleic acid, and a nucleotide analogue.

[Claim 29] The probe or primer as set forth in Claim 28 wherein said probe or primer is labeled with at least one fluorophore.

[Claim 30] A probe or primer at least from about 21 to about 50 or more consecutive nucleotides in length for use in detecting the presence of corn event MON88017 nucleotides in a biological sample selected from the group of consecutive nucleotides as set forth in SEQ ID NO:3, SEQ ID NO:4, and SEQ ID NO:5.

[Claim 31] A commodity or foodstuff comprising corn event MON88017 nucleotide sequences, wherein said sequences are selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:2.

[Claim 32] The commodity or foodstuff of claim 31 selected from the group consisting of corn oil, corn starch, corn meal, corn flour, a cosmetic, and a bulking agent.